



MARCIA JOHNSON/TID

Bob Garcia of Livermore Computing, at the opening of the Livermore Computing History Museum last week, in front of a photo of himself seated at the console of the Livermore Advanced Research Computer (LARC) circa 1965.

## From slide rules to supercomputers

By Don Johnston

NEWSLINE STAFF WRITER

You might say Bob Garcia got into computing on a LARC — the Livermore Advanced Research Computer to be exact. Garcia, an electronics engineer, was fascinated by computers in his early career and even contemplated a move to IBM. But after he was assigned to the group maintaining the LARC, he became convinced his future was in computing at the

Laboratory. “LARC was the first computer I had ever seen. It was amazing,” Garcia recalled. “I was going to leave the Lab for IBM but was reassigned to computation and LARC. It was all really neat stuff.” A poster-size 1965 photo of Garcia seated at the console of the LARC is on display in the LLNL Computer History Museum that opened last week in Bldg.

See MUSEUM, page 7

## Astrophysicists discover possible nanodiamonds in the early solar system

By Anne M. Stark

NEWSLINE STAFF WRITER

An astrophysicist from the Lab’s Institute for Geophysics and Planetary Physics has found that some nanodiamonds, the most famous and exotic form of stardust, may have formed within the inner solar system. The findings argue with the wide-held belief that nanodiamonds, recovered from meteorites from the asteroid belt, have been the most abundant type of presolar stardust grain. IGPP Director John Bradley, in conjunction with scientists from the Georgia Institute of Technology, the University of Washington, NASA Goddard Space Flight Center and the Natural History Museum in London, reported their discovery in the July 11 edition of *Nature*. “We presumed that if we studied (micro) meteorites (also known as interplanetary dust particles) from comets further out in our solar system, we would find more nanodiamonds,” Bradley said. “But we’re just not seeing them. One theory is that some, perhaps most, nanodiamonds formed within the inner solar system and are not presolar at all.” Interplanetary dust particles are collected in the stratosphere using NASA ER2 aircraft; they are made up of irregularly shaped grains of carbon and/or silicates. One origin of stardust is from supernovae, the cataclysmic deaths of stars. For more than 30 years, astrophysicists have looked to stardust, a sort of remnant of stars, to tell the story of our solar system’s origins. But Bradley and the group of researchers report that at least some of the oldest cometary

See STARDUST, page 8



## Special honors for C. Bruce Tarter

Former Director Bruce Tarter, Dick Post and Executive Officer Ron Cochran (from left) share a few memories during a special celebration to honor Tarter and his years as director. During the ceremony, Tarter was presented with awards from DOE, NNSA and the University of California, as well as accolades that were reverent and humorous. Former Deputy Director Bob Kuckuck warned those in attendance “I come to bury Caesar, not praise him,” then poked fun at the initial that begins Tarter’s name, his tenure as director, and a style of handwriting that is akin to Gaelic. A complete story will appear in next Friday’s *Newsline*.

DON JOHNSTON/NEWSLINE



Containing nuclear waste

— Page 3



Hoffman fellow’s first

— Page 5



Making room for the future

— Page 7



## LAB COMMUNITY NEWS

### Weekly Calendar

Technical Meeting Calendar, page 4

Monday  
**22**

The Lab's Disabilities Services Program is offering two, three-hour classes on **"How to Build Accessible Web Pages"** for audiences who are visually impaired, learning disabled or use English as a second language. Both sessions are free. For session information, times and class location and to register online, see <http://education.llnl.gov/accessibility>.

Tuesday  
**23**

The LLNL Women's Association (LLWA) is hosting a two-part **"Money Management For Women"** seminar presented by Nona Belous, financial adviser at Waddell & Reed Financial Services. Belous will be here today and Thursday at noon in Bldg. 571 room 2301. Contact: Dawn Cunningham, 3-6034.

Wednesday  
**24**

The Livermore Valley Winegrowers Association presents **"A Taste of Terroir (Tair-Wah)"**, a unique food and wine pairing that highlights the diversity in climate, soil and the art of winemaking in the Livermore, Sunol Valley and Palomares Canyon, 6-9 p.m., at the Shrine Event Center, 170 Lindbergh Ave. in Livermore. The event will feature the wineries of the Livermore Valley Winegrowers Association along with local restaurants, caterers, and food purveyors. Tickets are \$55 per person and can be purchased by calling 447-9463 or faxing 447-0433.

Friday  
**26**

The **Benefits Office** will continue its brown-bag series on how to enhance your financial security by participating in the Tax-Deferred 403(b), today from 12:15-1:15 p.m. in Bldg. 571, conference room 2301. Attendance is open and no pre-registration is required. Bring your lunch and your questions. For additional information about benefit services or events, see the Website at [www.llnl.gov/jobs/benefits](http://www.llnl.gov/jobs/benefits).

• • •

Visiting students are invited to attend a special panel discussion, **"Young Researchers: New Careers, New Challenges."** Panel members include Kim Budil, Bob Heeter, Chrisma Jackson, Mariam Maghribi and Anne Platt. Christine Hartmann-Siantar will moderate. The panel will be from 10-11:30 a.m. in the Bldg. 543 auditorium. For information and registration, go to <http://education.llnl.gov/sbb> or contact Barry Goldman, 2-5177 or [goldman1@llnl.gov](mailto:goldman1@llnl.gov).

**Broadcast  
Schedule**



**Lab TV**

The **DDLS talk by Yuri Oganessian** on "Synthesis of Superheavy Elements — the Dubna-Livermore Collaboration," will be broadcast on Lab TV Channel 2 Thursday at 10 a.m., noon, 2, 4 and 8 p.m.; and Friday at 4 a.m.

## Cancer awareness campaign takes off

For the second year in a row, a grassroots coalition of employees has organized a Cancer Awareness Campaign that features a number of informational talks on cancer-related topics, ranging from hormone replacement therapy to early detection of prostate cancer.

Following is the schedule for this summer's Cancer Awareness Campaign:

- "LLNL Skin Cancer Melanoma Program and Sun Protection," by Dr. Jeffrey Schneider, dermatologist and Lab consultant, on Friday, July 26, from 12-1 p.m. in the Bldg. 123 auditorium. Schneider will offer practical tips on sun protection accompanied by a slide presentation on non-melanoma skin cancer, pre-cancers and melanoma. He will include the results of the Lab's melanoma screening campaign and the role of the Mole Patrol offered by Health Services.

- "Prostate Cancer — Guidelines for Early Detection and Risk Reduction," by Robert Cronbach of the American Cancer Society, on Tuesday, July 30, from 12-1 p.m. in Bldg. 170, room 1091.

- "Peregrine: Advancing the Field of Radiation Treatment of Cancer," by Lab physicist Christine Hartmann-Siantar, on Tuesday, Aug. 6, from 12-1 p.m. in the Bldg. 543 auditorium.

- "Update on the Cancer Incidence and Mortality Among LLNL employees," by Dr. Jim Seward, LLNL medical director, and Dr. Mort Mendelsohn, former AD, on Tuesday, Aug. 13, from 12-1 p.m. in Bldg. 170, room 1091.

- "Does Overcooking Meat Pose a Cancer Risk?" by LLNL scientist James S. Felton, on Tuesday, Aug. 20, at noon in Bldg. 170, room 1091. He will present research that suggests it might be a cancer risk to overcook meat.

- "Prevention, Health Practices and Good Nutrition for Cancer Survivors," by registered dietitian Victoria Holmes Woolery of Kaiser Medical Center, on Thursday, Aug. 29, at noon in Bldg. 170, room 1091. She will discuss the role of medical nutrition therapy and intervention for cancer patients.

For more information on the events, contact Mark Costella at 2-8999 or [costella2@llnl.gov](mailto:costella2@llnl.gov).



A symbolic cancer awareness walk took place at the Lab this week as part of the Cancer Awareness Campaign (above). A health screening fair (right) featured the Lab's health and benefits services, in addition to outside health-care providers, who distributed information about cancer prevention, treatment and insurance coverage. Members of the Cancer Awareness Committee (below right), display the Cancer Awareness Quilt, which was started last year by the Lab's quilting group and is still under construction. Employees have submitted patches for the quilt that honors family and friends who have had cancer.



JULIE KORHUMMEL/NEWSLINE



## Lecture focuses on work in agricultural chemistry

Former LLNL intern Malinda Wilson will return to the Lab to deliver a lecture describing her work in agricultural and environmental chemistry. Currently a doctoral candidate at UC Davis, Wilson will discuss her findings regarding dietary supplementation of antioxidants in certain species of flies.

Her lecture, "The Consumption and Modulation of Micronutrients and Antioxidants in *Drosophila Melanogaster*," will be held at 10 a.m. Thursday, July 25 in the Bldg. 361 auditorium.

The lecture is part of the African American Lecture Series, sponsored by Chemistry & Materials Science and the Diversity Programs Office.

## Newsline

Newsline is published weekly by the Internal Communications Department, Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

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Printed on recycled paper



1952 – 2002  
MAKING HISTORY, MAKING A DIFFERENCE



Meeting challenges of nuclear waste isolation

*This is an ongoing feature highlighting the Lab's 50-year history. Here we take a look at the year 1980.*

In 1980, the Laboratory placed spent nuclear fuel 420 meters underground at the Nevada Test Site beneath the floor of a tunnel in Climax granite. In this experiment, Spent Fuel Test–Climax (SFT–C), researchers measured thermal loads from 11 canisters of spent fuel, six electrical heaters designed to mimic fuel canisters and 20 electrical heaters in adjacent tunnels. The combined measurements of the three-year-long test simulated the thermal behavior of part of a large geologic repository for nuclear fuel.

SFT–C demonstrated the feasibility of deep geologic storage of spent nuclear fuel from commercial nuclear power reactors. The test was part of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project for DOE. SFT–C showed Laboratory capabilities in materials science, nuclear science, earth sciences, advanced simulations, and engineered systems. The test’s success provided a foundation for subsequent collaborations with nuclear waste disposal programs in other countries. More directly, as NNWSI evolved into the Yucca Mountain Project (YMP), the SFT–C helped prepare Livermore researchers for their role as experts in addressing YMP waste form, waste package, near-field environment and repository performance issues.



Each spent fuel canister was moved over paved Nevada Test Site roads from the hot-cell facility to the mined test facility in a specially designed surface cask mounted on a low-boy trailer. The cask was upright for loading and almost horizontal for travel.

1980 spent FUEL



Nova Laser Facility

the world’s largest laser, became operational. Groundwork was laid for the Laboratory’s major role in the Human Genome Project.

Around the Lab

Major Laboratory work included magnetic fusion; inertial fusion; isotope separation; computer modeling with a new generation of supercomputers, and biomedical sciences and biotechnology. Nova,

Around the nation

- Reagan elected president
- Ted Turner launches CNN, which will air news 24 hours a day on cable television
- Music legend John Lennon is shot in New York

Around the world

- Iran-Iraq War begins
- Solidarity founded in Poland
- Zhao Ziyang becomes Chinese prime minister

in other NEWS

Other news around the Lab, the nation and the world.

For more of the Lab’s rich history, check out the Timeline, located at: <http://www.llnl.gov/timeline/>

Sign up foreign national guests now for open house

In order for foreign national family members and guests and P-cleared foreign national employees to attend the Family Open House on Sept. 21 and 22, their Q- or L-cleared hosts must fill out “blue cards” for the foreign nationals they will

escort.

The cards are available from Wendy Bishop in the Foreign Visits and Assignments Office in Bldg. 274, room 1047, the badge offices at Livermore and Site 300, and through directorate offices. Completed blue cards must be turned in to Wendy Bishop’s office no later than Aug. 7 to allow time for processing and

approval. P-cleared foreign national employees should seek assistance from their organizations to identify Q- or L-cleared hosts for themselves and their guests for the Family Open House.

For more information, see the 50th Anniversary Website/Family Open House Planning Guide at [http://www-rl.llnl.gov/50th\\_anniversary/openhouse.htm](http://www-rl.llnl.gov/50th_anniversary/openhouse.htm). If you have additional questions, contact Wendy Bishop, 3-9135, or [bishop9@llnl.gov](mailto:bishop9@llnl.gov).

CELEBRATING  
50 YEARS



## NEWS YOU CAN USE

### Dynamic hyperlinks to full-text journal articles

The LLNL Main Library has recently implemented a powerful new software package called SFX.

SFX allows library patrons who conduct searches of certain Web-based, journal citation databases to link to the full-text versions of the articles they find, provided that LLNL has a site license to the electronic journal. If no full-text version of an article is available, SFX creates links to the electronic library catalogs at LLNL and UC to facilitate searching for a hardcopy version of the article.

Currently, the LLNL Main Library has enabled SFX linking with Cambridge Scientific Abstracts (Metadex, GeoRef, NTIS, etc.), GaleNet (magazine and newspaper indexes and computer databases), and Web of Science (Science Citation Index). When you search one of these databases, you will see an SFX button inserted in your search results. Click on that button, and you will be presented with an SFX service menu. This menu includes:

- A link to the full text article, provided that LLNL has a site license to the electronic journal (or the journal is freely available on the Internet).
- A link to the LLNL Main Library catalog, to check if an LLNL library has a hard copy version of the article.
- A link to the MELVYL Periodical Catalog, to



Questions page.

SFX can't always point directly to a full-text article, even if one is available. Depending on the structure of any particular electronic journal, sometimes the best SFX can do is route you to the journal's home page or table of contents. From there, you need to navigate to the full-text article.

For any given set of search results, if no electronic full-text article is available and no hardcopy journal carried by LLNL or UC contains the article, you will get a message that says no services are available for this record.

The library will enable SFX linking on additional databases as soon as possible; these databases include: Current Contents, INSPEC, BIOSIS, and Engineering Index (Compendex). In the future, we will also add a link on the SFX service menu that connects to an interlibrary loan request form. We're still working on developing that capability.

If you have any questions or need assistance with using SFX, please call the Library Reference Desk at 2-4922 or e-mail [library-reference@llnl.gov](mailto:library-reference@llnl.gov).

check if a University of California library has a hardcopy version of the article.

- A link to an SFX Frequently Asked

*Come to*  
**DIVERSITY DAY**  
*On the green*

**Thursday,  
 Aug. 15  
 Noon  
 Lab pool area**

- Cultural entertainment
- Ethnic food
- Cultural booths
- Cultural clothing contest
- Great prizes

If you would like to participate or need further information, contact Michele Cardenas, 3-2796, or [cardenas7@llnl.gov](mailto:cardenas7@llnl.gov)

## Technical Meeting Calendar

Friday  
19

### ENVIRONMENTAL RESTORATION

"Microbial Ecology and Bioremediation of MTBE-Contaminated

Groundwater," by Kate Scow and Krassimira Hristova, UC Davis. 11 a.m., Trailer 4378, room 1014, Novista conference room. Contact: Staci Kane, 2-7897.

Monday  
22

### BIOLOGY & BIOTECHNOLOGY RESEARCH PROGRAM

"Structure and Molecular Mechanism of Novel

Enzymes of Spore-forming Bacteria: Genome-based Threat Agent Medical Countermeasures," by Mark J. Jedrzejak, Children's Hospital Oakland Research Institute, Oakland. 1:30 p.m., Bldg. 361, room 1155 (uncleared area). Contacts: Jim Felton, 2-5656, or Karen Fink, 2-7295.

### CHEMISTRY & MATERIALS SCIENCE

"Microstructural Evolution and Strengthening Mechanisms in Al-Sc and Al-Mg-Sc Alloys," by Emmanuelle Marquis, Northwestern University. 10 a.m., Bldg. 235, gold room (uncleared area). Contact: Wayne King, 3-6547, or Roberta Marino, 3-7865.

### APPLIED ENERGY TECHNOLOGIES

"High Efficiency Production of Hydrogen from Nuclear Energy," by Kenneth Schultz, General Atomics, LLNL. 1 p.m., Bldg. 543, room 1258. Contact: Robert Glass, 3-7140.

Tuesday  
23

### PHYSICS & ADVANCED TECHNOLOGIES

"Shock-Induced Transformation of Sapphire and Lithium Fluoride into Semiconducting Liquids,"

by Damien Hicks, LLNL. 10:30 a.m., Bldg. 219, room 163. Contacts: Kevin Fournier, 3-6129, or Eryn Davis, 2-0475.

### RADIATION DETECTION CENTER

"CVD diamond detectors for neutron spectroscopy at the NIF," by Greg Schmid, LLNL. 11 a.m., Bldg. 151, room 1209 (uncleared area). Contact: Christie Shannon, 3-6683.

Wednesday  
24

### INTEGRATED COMPUTING & COMMUNICATIONS

"Dell Technology Day," by Dell and Government Micro Resources. 9 a.m.-3:30 p.m.,

Bldg. 361 auditorium. Technical presentations will occur throughout the day on the following schedule: 9-10:30 a.m., Dell services training; 10:30-11:30 a.m., ADIC to include discussion of management tools, drive technology and future hardware products; 11:30-12:30 p.m., Dell/EMC SAN/NAS storage strategy; 12:30-1:30 p.m., Intel roadmap discussion of server and workstation-class processors; 1:30-3 p.m., Dell services tools for desktop, server and storage products. Contact: Candace Gittins, 4-4952.

### PHYSICS & ADVANCED TECHNOLOGIES

"Probe of Photoinduced Reaction Dynamics Via Resonance Enhanced Multiphoton Ionization Spectroscopy," by Abneesh Srivastava, Columbia University. 10 a.m., Bldg. 154, room 1013 (uncleared area). Contact: Matthias Frank, 3-5068.

Friday  
26

### ENERGY & ENVIRONMENT

"Economic Modeling of Renewable Resources," by Alan Lamont, Applied Energy Technologies Program. 1:30

p.m., Bldg. 543 auditorium. Contact: Camille Vandermeer, 3-2672.

Monday  
29

### CHEMISTRY & MATERIALS SCIENCE

"Hydrogen Bonding Dynamics at Surfaces and in Liquids," by Kelly Gaffney, Stanford

University. 10 a.m., Bldg. 235, gold room (uncleared area). Contact: Tony Van Buuren, 3-5639 or Roberta Marino, 3-7865.



### LAWRENCE BERKELEY LABORATORY

MONDAY, AUGUST 19- FRIDAY, AUGUST 23

The Sixth IBM Scientific Computing User Group (ScicomP) Meeting, hosted by Lawrence Berkeley National Laboratory. For more information see <http://www.spsicomp.org/ScicomP6/>. Early registration deadline is Monday, July 29 and proposals for user and vendor presentations must also be in by July 29. Contacts: Bronis de Supinski, [bronis@llnl.gov](mailto:bronis@llnl.gov) or Tom DeBoni, [TMDDeBoni@lbl.gov](mailto:TMDDeBoni@lbl.gov).

**The deadline for the next Technical Meeting Calendar is noon, Wednesday.**

Send your input to [tmc-submit@llnl.gov](mailto:tmc-submit@llnl.gov). For information on electronic mail or the newsgroup [llnl.meeting](mailto:llnl.meeting), contact the registrar at [registrar@llnl.gov](mailto:registrar@llnl.gov).



## NEWS OF NOTE



# 'Academic grandchild' of Hoffman wins fellowship award

By Anne M. Stark

NEWSLINE STAFF WRITER

Gini Curran realizes that not many people are familiar with or specialize in the field of actinide science. However, her fascination with the field is the main reason the MIT Ph.D. candidate in nuclear engineering earned the first ever Darleane Hoffman Fellowship. Curran received the award from the Chemistry & Materials Science Directorate's Glenn T. Seaborg Institute during a Thursday afternoon presentation.

"The actinide sciences, which include research associated with nuclear energy, waste containment and stockpile stewardship, are fascinating and present numerous intellectually challenging problems, and that's really the main reason I became interested," Curran said.

The term "actinide" refers to the series of elements in the periodic table starting with actinium and also includes uranium and plutonium.

The Hoffman Fellowship was established this year through the LLNL Seaborg Institute, said Christine Hartmann-Siantar, institute director.

"The goal is to identify and support talented graduate students in actinide science," she said. "We hope that Gini will one day be a scientific leader in this area, working on problems that are critical for the Lab and the nation."

The fellowship is funded through the Seaborg Institute in the CMS Directorate and the Department of Energy's Defense Programs Nuclear Science Internship Program.

The Glenn T. Seaborg Institute is dedicated to advancing nuclear science as a tool for solving important national needs. Fields of study within



JULIE KORHUMMEL/NEWSLINE

Gini Curran (right) was awarded the Darleane Hoffman Fellowship for her work in actinide science by Hal Graboske (center) and Darleane Hoffman, the fellowship's namesake (left).

the institute include nuclear physics research, chemical properties of actinides, the discovery of new elements and bionuclear science. The Nuclear Science Internships program is geared to attract the best and brightest undergraduate and graduate students from all areas of nuclear science.

Hartmann-Siantar and institute Deputy Director Patrick Allen said Curran was the perfect candidate for the fellowship. Curran, 25, is active in the American Nuclear Society and created her own Website about plutonium. In addition, her MIT thesis adviser, Professor Ken Czerwinski, was a student of Darleane Hoffman.

"It's as if Hoffman is an academic grandparent to Gini," Hartmann-Siantar said.

Hoffman, a UC Berkeley faculty senior sci-

entist in the Nuclear Science Division of Lawrence Berkeley National Laboratory and a professor in the graduate school, is an internationally recognized chemist known for her study of the transuranic elements — chemical elements heavier than uranium that typically decay to lighter elements in seconds or milliseconds.

Before coming to Berkeley, Hoffman worked at Los Alamos National Laboratory for 31 years on nuclear chemistry and the spontaneous fission of elements. She also worked on radionuclide migration in the environment, which is relevant to the storage of radioactive waste.

Hoffman also served as director of the LLNL Seaborg Institute from its inception in 1991 to 1996.

"She's a real pioneer," Hartmann-Siantar said of Hoffman.

"The fact that she, as a woman, was doing science at that time makes it possible for people like me and Gini to establish our own scientific careers.

"In naming this fellowship after Dr. Hoffman, we hope to instill in young people that she and the other great nuclear scientists are heroes. We want them (students) to be the next generation of heroes."

Allen, who will serve as Curran's mentor and thesis reviewer while she works at the Laboratory this summer, said Curran was selected from a pool of 10 candidates. "This will help her further her graduate research," he said.

Curran said it's an honor to receive the fellowship because she considers Hoffman a hero in her field.

## NEWSMAKERS

### Moss elected Acoustical Society fellow

Willy Moss, of the Geophysics and Global Security Division of the Energy and Environment Directorate, has been elected a fellow of the Acoustical Society of America.

The announcement and presentation of his fellowship certificate will be made during the plenary session of the society's meeting in Cancun on Dec. 4.

The society formed in 1929 and has grown steadily in membership and stature. About 7,000 men and women who work in acoustics throughout the United States and abroad are members. The society represents a variety of fields related to sound, including: physics, measurement technologies and instrumentation, engineering, robotics and computer sciences, oceanography, underwater propagation, biology, physiology, psychology, architecture, speech and hearing, music, noise and noise control, animal bioacoustics and structural acoustics and vibration.



Willy Moss

Moss was chosen as a fellow "for contri-

butions to numerical modeling of single-bubble sonoluminescence."

The society is primarily a voluntary organization and attracts the interest, commitment, and service of a large number of professionals. Their contributions in the formation, guidance, administration, and development of the ASA are largely responsible for its worldwide preeminence in the field of acoustics.

### Heuze elected president of ARMA

Francois Heuze of the Geophysics and Global Security Division has been elected as president of the American Rock Mechanics Association (ARMA) for a two-year term.

The association performs several functions dedicated to the service of its individual and corporate members in the field of rock mechanics and rock engineering. One of ARMA's main tasks is to organize the annual U.S. Rock Mechanics Symposium, a conference that has always drawn international participation. The symposium typically offers several workshops and short courses as part of its program.

While serving as president, Heuze intends to expand ARMA's services to members, among which are several scientists and engineers from LLNL. "We have two major ongoing projects: one on the implementation of a digital library with privileged member access to a large number of publications, and one offering continuing education courses in rock

mechanics and geological engineering," he said. Heuze said the library project is well advanced and the course planning has started.

ARMA also is involved with the NSF in planning for the creation of a National Underground Science Laboratory.

Heuze is currently a member of the LLNL team working on the defeat of hard and deeply buried targets, and is the LLNL representative on the Mining Review Board for the underground U1a complex at the Nevada Test Site.

Heuze started his career in rock engineering in 1962 in the coal mines of eastern France. He earned graduate degrees from the French National School Mines and from UC Berkeley. During the past 40 years, 23 at the Laboratory, he has been involved in many different facets of rock and soil engineering, such as designing safe underground facilities, gas recovery, drilling for Comprehensive Nuclear Test Ban Treaty on-site inspections, mitigation of mine seismicity, ensuring the stability of high rock slopes, site-specific estimates of strong earthquake motions and weapons effects on underground structures.



Francois Heuze



**AUTOMOBILES**

1987 T-Bird, fully loaded, VG condition, 111 K miles, \$2,200. 925-449-1592.

1994 - Toyota Tercel, 2d, 4 speed, A/C, AM/FM Stereo Cassette, 94K, excellent condition, \$1900 obo. 925-960-9624

1993 - Chevrolet Camaro Z28, LT1 350 V8 with 6speed. Black with T-Top. Brand new tires. Lots of miles, but very strong. \$4700 925-516-9822

1992 - Ford Explorer XLT, Excel Cond, 74k mi, New A/C, New 5spd Trans, PW/PB/PL, AM/FM/Cass, Cargo Net. \$6500/OBO 925-240-1090

1996 - Volvo 850 Sedan. 102K miles. Fine mechanically, accident free. CD changer. Includes bike/ski racks. Asking \$8K. 925-454-9253

1999 - Cougar,V6,5 Speed,32K,Ext Warr,AC,PS,PB,PW/PL, CD Premium Sound, Dual Air Bags, Leather,Sun Roof, 4 Wheel ABS,\$10,500(KBB\$12,340)Days 925-226-4159 or 925-240-5035

1997 - White Dodge Neon, 4DR, automatic, AM/FM/CD, AC, 80k, good condition,1 owner, \$5,900 OBO 925-398-8109

1992 - Plymouth Grand Voyager SE minivan, clean, well maintained. V-6 auto, rear AC, power windows/ locks, built-in child seats. 150K mi. \$3800. 925-634-2762

1998 - BMW M Roadster. 24,000 miles. New tires and just serviced. \$28,500. New \$60,000. 925-455-9439

1991 - Cadillac 2 Door Coupe Deville, Original Owner, Low Miles 67,000, clean and runs like new, illness forces sale, \$6500. 925-513-3177

1999 - Mazda Millenia - S - 23K miles, pearl white/gold, fully loaded, bal of warr 5/100K. View on LLNL car lot. \$22K obo. 925-449-0925

2000 - Honda Civic Ex, 2 dr, Auto, Silver, PW, PL, Tinted windows, Custom rims & tires, CD, Excel condition, 28k miles, \$13,900 209-832-2862

1992 - BMW 525i, 5 spd, only 63.5k mi, air, am-fm cass, cruise, power seats, windows & locks, new tires. Exc cond \$12,900 obo 209-814-4757

1997 - Saturn SC2. Coupe.4 cyl-2dr, leather, moon roof, CD/cassette player, alloy wheels, cruise control, power windows/lock/steering, A/C. \$5,700 OBO. 925-485-1517

2000 - Ford Focus zx3 5spd. ac,cd,abs,pl,tw,side airbags,brand new tires ex.cond.commuter car. blk/drkl.gray int.48kmi.MANY EXTRAS,MUST SELL \$9950obo. 925-596-0165

1984 - Toyota Supra, Good commuter, P/S,A/C, new tires, battery,water pump and radiator. \$1500 obo. 925-443-2827

1987 - Toyota Corolla FX16 GT-S 4AGE Engine Pwr Windows, Mirrors, Locks, and Moonroof Air Cond, Alloys Stereo Runs Great Good Cond \$1795.00 OBO 209-918-1437

2002 - Utility trailer 6.5ft x 16ft, tandem axle, auto ramps. \$1,100. New! 209-239-2781

2001 - Adventure cabover camper, for short bed 3/4ton truck, load w/everthing, MUST SEE, first kid on the way! cost 25k, ask 17k OBO,call 209-303-3520

1998 - Honda Accord Ex V6,Green, leather, sunroof, fully loaded, 70,000 org miles. 14,000 obo. 925-371-6805

1995 - GMC Safari Van,Extended,8 Pass,AWD,Great for Skiing! Loaded,SLT trim, new tires, brakes, tuneup,123k miles,high book \$10,600,\$7900. 209-599-4644

1998 - Ford Explorer XLT 4X4, AWD, auto, V8, 4 dr, rear ac, priv glass, loaded, 65K mi. Asking 13,800. 925-449-1545

1988 - MERCEDES BENZ 190E, 2.6, White. 510-357-8594

1995 - Lincoln Mark VIII, excellent condition, all options \$8995.00 925-447-7234

1965 - Chevelle 4-door. 283, dual exhaust, 4-bbl. 2-tone paint-white/rust, runs well, reliable. 925-373-6751

1993 - Nissan NX 1600, with T-Bar roof, A/C, 5 speed, New tires, and brakes. CD/changer, Well Maintained, in nice shape. \$3500 408-506-8391

1996 - Chrysler Concorde LXI, blue/green, leather interior, CD, AC, 6 cyl. \$6000 OBO. 925-449-1829

1990 - Plymouth Grand Voyager LE, 140K miles, V6, seats 7, rebuilt trans., P/S, P/W, P/DL, needs some work. \$1599 OBO 925-606-1637

1989 - Lincoln Continental Signature Series, Loaded, climate control, ABS, Bose stereo/CD, airbags, looks, runs and rides great, 176kmiles, \$2400/offer 209-599-5056

2001 - Honda Civic EX - Like new,6000mi,moonroof,am/fm/cd,air,paint/fabric protection:\$16,000 call after 7pm 209-464-2552

2000 - For Sale - Honda Accord V6 autotrans 4DR. Leather, sunroof, foglamps, CD changer, autoclimate, alloy wheels, maintenance records, 74k miles, \$15,500. 650-728-2535

2001 - VW beetle,silver,19K miles,extended

# CLASSIFIED ADS

warranty,very clean,asking 14,800 OBO 925-240-1642

1993 - Mercury Sable GS, 66K miles, Auto 3.8L V6, one owner, Candy Apple Red, Great student/commuter car, \$3500 OBO contact Chris 209-836-3069

1997 - Plymouth Grand Voyager SE, V6, A/C, C/C, PS/PW/PL, seats 7, 1 owner, 76K miles, exc. cond., \$9900. 925-846-3875

**AUTOMOBILE ACCESSORIES**

Wheels/Rims (4) 16 inch 6 lug off late model Chevrolet 4x4.\$50 925-516-8339

Acura Integra custom car cover with storage bag and lock for 1994 or newer 2-door coupe. Like new. \$80.00 925-447-4352

Blue camper shell for GMC S-15, Chevy S-10, or similar. Good condition. \$100 925-625-5938

Tent cover for SUV or car. 10x20 ft. Metal frame, removable side flaps. White \$100/obo. 510-653-8382

Flowmaster cat-back exhaust, 50-series Delta-flow. Side exit before rear wheel. Sounds awesome. Like new, used only 4 months. GM ext.cab trucks. \$250 209-365-0412

CD, AM/FM RECEIVER: Blaupunkt Nevada RDM168, 4x40 watt, used 2 wks. \$125.00. 209-833-0382

**BICYCLES**

Mountain bike. Trek 6000. Excellent condition. First \$200 takes it. 925-426-8196

Boys' Bike, 20 inch, good condition, \$30 925-455-6516

18 speed Huffy comfort mountain bike. 5 months old, hardly used, asking 80.00 or best offer. Call 925-456-6166. 925-456-6166

BMX Bicycle. Used very little. \$50 925-447-8557

**BOATS**

Two 97 SeaDoo's -- 3 seater/2 seater. Must See! Great condition and low hours. 3 seater can pull skier. \$10,000 obo 925-980-0923

Jetski, 1983 Kawasaki 550 wedge. low hours, great shape, new battery, ride sitting down (waverunner) or standing-up. \$1200/offer 209-599-5056

**CAMERAS**

Canon Video Camcorder. Excellent condition. \$135. 209-522-7872

**ELECTRONIC EQUIPMENT**

Great for work, school and fun! New hand-held/palmtop/PDA computer Visor Deluxe, iceblue,leather case,cradle,stylus,lots of software, batteries. \$90obo 925-960-9624

Computer - HP Pavilion 4445: Celeron 366MHz, 64MB SDRAM, 4.3GB hard drive, CD-ROM, floppy, 56Kbps modem; CPU&motherboard ~ 1 year old. \$250 obo 925-371-0783

Game Shark and guide book with codes for GameBoy, \$10. 925-245-9648

Yamaha cd player, Technics int amp, two Fulton speakers. Great little sound system. Costs \$850 a few yrs ago. Sell \$200 ? 925-829-1474

**GIVEAWAY**

FREE Purebred Labs 1yr(1 Chocolate/1 Yellow). These guys need a family that can spend the time with them. Great with kids. Some obedience training. 209-832-7971

JC Penney Washer in working condition. Free to first who can pick it up in Livermore. Leave message if interested. 925-443-3865

**HOUSEHOLD**

Oblong oak table (42 x 60 inches) with removable leave and four chairs. Honey color with center stand. \$200 OBO 925-371-4479

Sofa and Rocker/Recliner. Very good condition. Sofa \$100; Rocker/Recliner \$50. 925-449-7651

Contemporary Wood Dinette Set, oak colored table and four cushioned chairs, \$125. 925-368-7654

Sofa for sale. L-shaped with queen-sized sleeper. Great for TV room. good condition. \$75 925-736-0960

2-sets of Mattress/box-spring/bed-frame, dinette table/chairs, cushions, microwave oven, and stepper exercise machine. 925-447-4249

Oven/Microwave unit. Black, excellent condition. Call for details. \$250 obo. 925-516-2446

Radial Arm Saw, Craftsman, 10 inch, mounted on table with wheels. Good condition. \$150/BO. 209-941-9114

2 Light Oak Barstools 24 inch, Excellent condition, Orig \$90 - Sell \$35 each 925-998-2620

Garage Sale 7/20 9 to 3pm 841 Mohawk Dr.

Livermore, Lots of stuff. 925-447-9196

Cultured marble sink (almond, 19in X 25in) w/ back splash and Peerless faucet hardware, \$10 obo. 925-449-6334

Rectangular Pine dining table with leaf. Four Windsor chairs, Pine & white. Asking \$150 for all five pieces. Call Eileen after 5:00pm. 925-426-7400

Whirlpool cooktop, w/ indoor bbq grille. \$50 obo. Broan sst range hood. 48in. wide, 350cfm, var. speed. \$40 obo. Both in good cond. 925-830-0323

Students Classroom Desk, solid oak, \$30; Lawn Fertilizer Spreader, like new, \$20; Fisher-Price Rocking horse, \$15. 925-455-6516

Butcher-Block Kitchen Island on Casters, \$100; 5 shelf Bookcase, wood, \$100; 5-drawer Chest of Drawers, \$80; small wood desk, 4 drawer, \$150 925-455-6516

Refrigerator, 18CF, runs good. \$25.00 925-443-2827

Twin sized white iron daybed with roll out trundle & two mattresses, very good condition. Asking \$100, will negotiate. 209-545-5075

Bedroom set, Solid pine, king size headboard with shelves, one nightstand, dresser with hutch and mirror, \$300. 925-449-8124

Queen size bed with metal frame, 5 months old, excellent cond. 150.00 or BO. 925-456-6166. 925-456-6166

Whirlpool large capacity dryer. Works fine - \$75. Maytag washing machine. Works fine on normal load settings - \$50 925-454-9253

Moving sale: queen bed/frame, dresser,kitchen stuff,entertainment center,digital images available on request. 510-207-0594

Sofa bed and chair, excellent condition \$200 925-447-5208

(5) 4 foot tab valances. Navy blue tab, maroon,tan,green, navy patchwork design. Angel button on each tab. 14 inches long \$25. 209-835-9082

Solid oak TV cabinet. Has 4 VCR tape storage drawers and glass display area with light. \$400 925-449-4202

Bed: single white rod iron with mattress. Used very few times. Excellent condition. \$100.00. 925-443-0288

Office desk, metal, light yellow color, good condition, 30d x 60w x 32i with wooden top (oak color). \$75 925-838-7021

Jenny Lind wooden crib with matching changing table. Used but in good shape. \$75/both or BO. Wooden highchair with removable tray \$35. 209-836-5764

Carved oak beveled and etched glass tables, some panels may need replaced. Orig. ~\$1000 for 4, \$75-150 ea. Wood in excellent cond. 209-848-8965

**LOST & FOUND**

Lost: white hooded sweatshirt with Minnie Mouse on in the women's locker room at the pool on Tuesday, July 16. Please call if you found it. 925-373-6814

**MISCELLANEOUS**

Quality car seats (2) for toddlers. \$35 for both. (Our twins have graduated to booster seats.) 925-449-7525

Wine Barrell, 60 Gal. American Oak. Used for red wine for three years. Good Condition \$60.00 925-443-7752

Mac computer, monitor and printer. Good for starter. Asking \$100.00 OBO 510-537-7222

Yamaha Generator Model EF 1600 \$350.00 925-828-3044

Two glass chandeliers w/ downlights. \$40 and \$30 ea obo. 30 in. interior door w/ frame. \$20 obo. All in good condition. 925-830-0323

Quality traditional sofa and platform rocker. Blue w/petite floral vine, oak trim. \$400/200 or deal for both. 209-848-8965

Adventure cabover camper, for short bed 3/4ton truck, load w/everthing, MUST SEE, first kid on the way! cost 25k, ask 17k OBO,call 209-303-3520

28 gallon propane tank. Free to first who can pick it up in Livermore. Leave message if interested. 925-443-3865

Two toddler car seats in great condition. \$25 each or \$45 for the pair. 925-454-9253

Wheel-chair, very good condition. \$75 925-838-7021

Adobe Photoshop 6 UPGRADE (Windows), includes CD, User Manual, Quick Reference Card. You MUST have an earlier version to UPGRADE. \$75 925-447-6450

Watches for sale from Rolex to Movado call for more detail. 925-371-0911

Radial arm saw. Craftsman 10 inch with metal stand and casters. \$230 209-823-4730

Silver Tab loose jean shorts, exc cond, med. blue, sz 29 \$5 Silver Tab baggy jeans, med. blue, sz 30X36, exc cond. \$10. 209-835-9082

Anchor Blue Baggy jean shorts black, sz 30, exc cond. \$5 Anchor Blue Baggy Corduroy shorts, off-white, excel cond. sz 30 \$5 209-

835-9082

Levi, jean shorts, excel cond. sz 30. \$5 Levi, silver tab jean shorts, sz 30, dark blue, excel cond \$5 209-835-9082

**MOTORCYCLES**

1999 Honda VFR800, excellent condition, all stock, always garaged. low miles (under 3,200). Includes Ventura luggage, heli-bars, tank bra, cover. \$7,600 OBO. 925-485-1517

1988 - Yamaha FZ600, 38K Miles, Black, Yoshimura exhaust, Showa Suspension, Excellent Condition, \$3000/obo. Call Evenings after 5pm 209-470-1971

1998 - Beautiful customized Harley Davidson Heritage. Too much chrome and extras to identify. Must see if seriously interested. \$23,000 925-516-9822

1989 - Kawasaki ZX10. Black/Red. Excellent condition. 17K miles.\$4,500.00 925-455-1165

1999 - Harley Sportster 883-C, high flow air filter and pipes, billet mirrors, 2-helmets, black, garaged, 2000 miles, \$5900. 925-227-1448

1994 - Honda 300 4-Trax quad, 4x4, low hours, good cond. \$3500 925-606-6939

**MUSIC INSTRUMENTS**

Gibson Les Paul, Smart Wood model, natural finish. Excellent condition. Seldom played. \$700 OBO 925-373-9122

**PETS & SUPPLIES**

Border Collie Puppies For Sale \$600.00 For Females, \$500.00 For Males, Please Contact 925-381-2359

Divorce is forcing owner to seek new home for 4yr,friendly,shepard mix,all shots/spayed, good with children. 925-837-0863

J&J Pet Services will happily groom and/or walk your dog. If you are in Livermore, give us a call! 925-292-9231

Large Stainless Steel rabbit cage with plumbing. holds 12 rabbits max. worth \$2500. Seller asking \$900 OBO. mint condition. ask for Anne-Mari 925-447-7897

Australian saddle, used infrequently. \$100/offer 209-848-8965

Dogloo dog house for medium to large dog. \$25.00 925-443-2827

Doggie door for sliding glass door. Glass panel insert. Paid \$150. \$75. 925-648-0671

Akita for Sale. Female, 1yr,AKC,Show quality, Red Brindle,3/4 Import,Champion lines. \$600 nego. 209-629-3630

**RECREATION EQUIPMENT**

Pool table, Brunswick, 1 inch slate, 6 inch rails. excell cond. \$1000 firm 925-516-8339

Refractor telescope. Orion Skywatcher 120EQ 4.7 inch aperture. Many extras. Perfect, rarely used. In custom made wood case. \$700/offer. 925-606-6515

Olympic weight set, standard curling bar with 2-25lb weights and adjustable bench. \$100 925-961-1089

K2 Rolleblades Mens size 10. Used once. Gloves included. \$155 new, sell for \$75. 209-833-4429

**RIDESHARING**

Express your commute, call 2-RIDE for more information or visit http://www-r.llnl.gov/tsmp.

Layfayette - LaMoRinda (also Walnut Creek stop at Rudgear Rd) luxury Vanpool (reclining seats, reading lights) 8-4:45, \$100/mo (pretax reduction available!) David 925-943-6701, ext. 2-3005

Orinda - Carpool from Lamorinda (Highway 24 and St. Stephens) needs 4th rider/driver. Lab hours 8:10am to 5 pm. 925-253-0498, ext. 2-9823

Manteca - Rider/Driver for four person carpool. 8-4:30 209-823-5085, ext. 2-0643

Stockton - Victory Park departure. Rider/Driver wanted for three person carpool. Lab arrival at 7:15 A.M., departure at 4:00P.M. 209-931-6836, ext. 2-0356

Cupertino/Sunnyvale - Carpool Cupertino/DeAnza area to LLNL 8:00 - 4:45 408-257-6850, ext. 4-4527

**SERVICES**

Roofing, 28 yrs experience, fully insured 925-454-9200

Painting interior,exterior,quality paint quality work.neat and clean.free est 925-447-0589

Local Livermore residential electrician specializing in service upgrades and electrical maintenance. Call for estimate. 925-373-3429

Housekeeping services available. Efficient and reliable. Many local references available upon request. Please call if interested. 925-443-1632

House Cleaning, weekly, bi-weekly, monthly and one time cleaning. Free estimates, Cell.

number (209)601-2040. 209-943-0674

Quality Child Care 7:30-5, immediate openings for PT full days, ages 0-5, Livermore off Murielita. 925-373-9452

CHILD CARE in my Livermore home. 0-5 years old. Fun, loving, and supportive atmosphere. 15+ years of experience. Call anytime. 925-373-9428

Does your car need AC Service? AC filling and repair work. Most work can be done at LLNL during lunch. Call and leave message for info. 209-662-0640

**SHARED HOUSING**

Livermore - Room available 4 bedroom home 10 minutes from LLNL, full privileges, pool, spa, \$575.00/mo.+ \$350.00 deposit plus some utilities. 925-373-9178

Room to rent, close to lab, 450.00 a month. 925-724-2318

Livermore - room for rent -- private entrance, full bath, kitchenette, cable and utilities incl. \$725 month - \$700 deposit. 925-449-5242

Livermore - --rooms available in new home in the vineyards, w/in walking distance of the Lab, h/s internet, cable TV included. \$650-795 mo. 925-449-1545

Livermore - Room for rent. good east side neighborhood. \$460/mo. small room, furnished..utilities included. smoker okay. 925-447-6218

**TRUCKS & TRAILERS**

2000 - Dodge Dakota SLT, V8, 4X4, loaded, ex cab, blue, power everything, AM/FM/cass/CD, liner/cover/ tow, 47K miles, exc cond, \$16,900 OR OBO. 925-447-2867

1956 - Ford F-100 V-8, well maintained, runs fine, reliable transport, one owner past 30 years, complete service record. Ideal for restoration. \$2500 925-447-9065

2002 - Utility Trailers 6.5ft x 10ft. Single axle, one has a rear tailgate,one has tilting bed \$900 ea. 209-239-2781

2000 - 2000 Ford Diesel, Great condition 25k OBO 424-6170, Cel 437-1737 925-961-9799

1991 - American Steel 3 Horse Gooseneck good condition. \$5000 OBO 424-6170 925-961-9799

1979 - GMC Sierra 89,200mi. straight 6, new starter & battery. Needs cyl. head (cracked?). \$800 obo. 209-957-1653

1984 - Nissan Kingcab Delux, p/s, p/b, a/c, shellw/ carpet kit, flip-up roof, looks and runs good, 225K miles, \$2250/offer 209-599-5056

1991 - '91 Ford Ranger. AT, AC, PS. Shell. Excellent Shape. \$2000 OBO 925-447-8557

2001 - Adventure cabover camper,f/sht bed 3/4t truck,loaded w/everthing.cost 25k, ask 17k OBO MUST SEE, first kid on the way 209-303-3520

1999 - Ford F-150 XLT Supercab 4x4. Black. Looks and runs great. 5.4 L V8, power everything, new tires, 12 CD changer. 61,000 miles. \$17,500. 925-240-9841

1993 - Ford Explorer XLT 4x4, 85K miles, excellent condition, loaded with all extras, \$6500 925-454-3342

1968 - Ford F-350 flatbed, dually, runs good, needs thermostat, good ranch truck \$1000/obo 209-848-8965

**VACATION RENTALS**

So.Lake Tahoe - Close to hiking/biking trails.Gas barbecue, pool/foosball tables, washer&dryer. Ideal for large groups. 925-484-3162

SOUTH LAKE TAHOE - 3 Bedroom 2 bath Chalet, newly remodeled, nicely furnished, all amenities, Park with Lake, tennis, playground, Great for families! Reserve Now! 209-599-4644

Maui, HI - Kahana Reef oceanfront 1BR/1BA condominium. Beautiful two-island view, oceanside pool, and BBQs. Low LLNL rates for year-round reservations. 925-449-0761

Stateline - Tahoe, one-bedroom resort condo right at the beach. Deal! \$400 for July 27-August 3. Microwave, fridge inside, BBQ and laundry on grounds. 925-933-5678

MAUI-Kiheie: 1.2& 3 bedroom condos. On beach, large pool, tennis courts, beautiful grounds, BBQs. Close to golf course. Washer/dryer in units. 925-846-8405

Kailua-Kona, HI - 2bdrm, 2 ba Condo on Alii Dr. New unit, nicely furnished w/air cond, distant ocean view. \$1800/month until December, 2002 925-833-6061

**WANTED**

Wanted-Weights set. Bench with weights for teenage son. Beginner. Cheap. Thank you. Please call after 5:30. 925-443-6015

Need designing ideas and help on landscaping a large backyard. New home-owner willing to help with deck-work but lacks creative ideas! Call 510-537-4777



# AROUND THE LAB



## MUSEUM

Continued from page 1

439. Visible in the photo behind Garcia are three large cabinets holding 10 K of memory each. LARC had what was then an astounding 30,000 words of memory. Not visible in the photo is the large adjoining room where rotating storage drums were housed — the equivalent of a hard drive on a desktop computer today, Garcia said. “Though a hard drive today would hold a lot more information.”

Garcia’s career at the Lab has followed the evolution of high performance computing since the mid 1960s. Today he works in Livermore Computing on the ASCI network “supporting the same group I worked for back then.”

The exhibit of computing memorabilia in Bldg. 439 represents only a part of LLNL’s collected artifacts, most of which have been in storage at the Computer History Museum at Moffett Field awaiting construction of the museum’s permanent building.

Barbara Costella Anderson, a docent for the current exhibit, was one of the people who led the effort in the early 1980s to collect computing artifacts. “We realized that a lot of computing history was going out the door,” she said. “Alice Pitts and I did a lot of the collecting.”



Barbara Costella Anderson sitting at a teletype machine on display in the LLNL Computer History Museum.

The problem was finding a place to store items in Bldg. 113, Costella Anderson recalled. “We used any dark corner or empty closet and covered items with plastic bags.”

With support from the associate director for Computation, the collection found a home in a half building at Almond Avenue School in the late 1980s. “We also displayed pieces of the collection at conferences and shows.”

Even for veterans of the Lab’s high performance computing programs, the collection can contain some surprises. Garcia

found a familiar looking textbook on digital computing, which “when I opened it had my handwritten notes.”

The text was from a class Garcia had taken in the mid 1960s and which he had donated to the collection in the 80s. “I had completely forgotten about it.”

The current exhibit is a chronological journey from the predawn of supercomputing in the early 1950s, when a scientist’s computational tool kit consisted of a slide rule and adding machine, to the state-of-the-art desktop of today. As visitors exit, they can glimpse the future of supercomputing, an artists rendition of the Terascale Simulation Facility currently under construction on the south side of the central drainage retention basin.

The LLNL Computer History Museum will be open through the 50th anniversary events of September before returning to

storage. Shortly thereafter, computing history will continue its inexorable march into a new era with the installation of the Linux NetworX Evolocity Cluster in Bldg. 439.

Conception and design of the museum was led by Bing Young with assistance from Alane Alchorn, Sue Wiebe, Peggy Poggio, Angela Walden, Tina Maher, Jean Shuler, Hal Nida, John Reehl, Steve Holstrum, Chuck Cole and Barbara Costella Anderson.

Employees may visit the LLNL Computer Museum from 10 a.m. to 1 p.m. on Tuesdays and Thursdays or by appointment. For more information, contact Bing Young, 3-0281.

COMING SOON!

The next issue of the quarterly magazine, *Family Safety & Health*, is in the mail. Look for it in your mailbox at home.



Sponsored by the Safety, Security and Environmental Protection Directorate

## Bringing down Bldg. 177



JACQUELINE MCBRIDE/TID

Demolition of Bldg. 177 got underway earlier this week after a brief ceremony attended by employees who worked in the Atomic Vapor Laser Isotope Separation (AVLIS) program, which was housed in the facility. As a result of demolition, some accesses and sidewalks near the building have been blocked and motorists on the northern section of Avenue B are asked to exercise caution. Mary Spaeth (right) of the National Ignition Facility examines a part of the building prior to demolition.



# Luminaries Day sheds light on physics, then and now

By Ali Carrigan and Stephanie Esposito  
NEWSLINE STAFF WRITERS

According to Nobel Laureate Bob Laughlin, the future of physics at the Lab lies in making sure that weapons designs are correct.

Laughlin's speech, "A Perspective on the Future of Physics," was the first of six lectures during the Physics and Advanced Technologies (PAT) Luminaries Day held on June 28 as part of the Lab's Then and Now 50th Anniversary celebration.

Laughlin's talk stressed how important it will be in the future for scientists to identify flaws in designs by using both experiments and computer simulation. He warned that scientists should not rely solely on computer output because the codes can contain mistakes. To identify those mistakes, Laughlin said physical understanding and insight are needed to thoroughly comprehend what is in the codes, why the approximations work and when they can be expected to fail.

"We rely at the Lab on complex, proprietary computer codes," Laughlin explained. "This is good for security but not for validity."

Laughlin also spoke on the recent national focus on biology connected with bio-terrorism. He said that some people have started calling physics "the science of the past" and biology the "great new age," especially since biology research is being used for anthrax detection. He said this is just like "saying we're at the end of knowledge." Laughlin explained that physics still has a great role to play in the future of science and

that he expects it to rise to the occasion.

The next speaker, Mike May, began working at the Lab in 1952 for the nuclear design group before becoming Lab director in 1965, a position he held until 1971. His talk, entitled "The Future of Nuclear Arms Control Policy," examined current U.S. nuclear policy and proposed alternatives for the future.

"Current nuclear policy is virtually silent on international cooperation," May said. "It assumes that the U.S. will be prepared to handle anything, and that's just not realistic." May also warned of the ease with which nuclear materials were proliferating, and the effects that might have.

"Look at countries like South Africa and North Korea — they built nuclear weapons from scratch," he said. "For non-proliferation to really work, the countries involved have to be willing to comply — the U.S. can't coerce non-proliferation."

May was followed by Jay Davis, who spoke on "The Future of Global Terrorist Threats." Davis, once the director of the Center for Accelerator Mass Spectrometry, had returned to the Lab after directing the Defense Threat Reduction Agency in Washington, D.C.

"Motivations for terrorism aren't the same as they were in the past," Davis said. "We don't hate each other over politics anymore. We hate each other because of race and religion — the things you can't negotiate away."

Davis detailed the goals of terrorism, and some of the most prominent threats. He ended by noting, "I think that the creation of a Department of Homeland Security offers

the Lab the opportunity to become a truly national lab."

Former Director John Nuckolls spoke next on the "Future of Fusion Energy." He focused on the critical need to continue the outstanding progress of the past 50 years until fusion energy systems become an attractive private sector investment. "Fusion's winning strategy is invent," he emphasized.

Nuckolls predicted that NIF, with a new high-energy petawatt capability, would stimulate invention of a series of revolutionary high performance targets, relevant to stewardship and energy goals.

Nuckolls foresees a world future shaped by major surprises where, with continuing progress, the fusion dream of inexhaustible energy will ultimately be realized. "Recruit future generations and thrive on surprises," he concluded.

PAT's "Then and Now" celebration was wrapped up by Charles Alcock, who discussed "The Future of Astrophysics." Alcock, a former Lab employee now employed at the University of Pennsylvania, won the E.O. Lawrence Memorial Award in 1996 for his work on astrophysics.

"We've been able to map the universe with increasing realism," Alcock said. "And as realism continues to increase, our tools get better and we learn more." Some of the "tools" Alcock discussed included the California Extremely Large Telescope, the National Virtual Observatory, and the Large Synoptic Survey Telescope.

"I don't know what the next 10 years hold, but we do have some good guides because of the work done by organizations like the Lab," Alcock said.

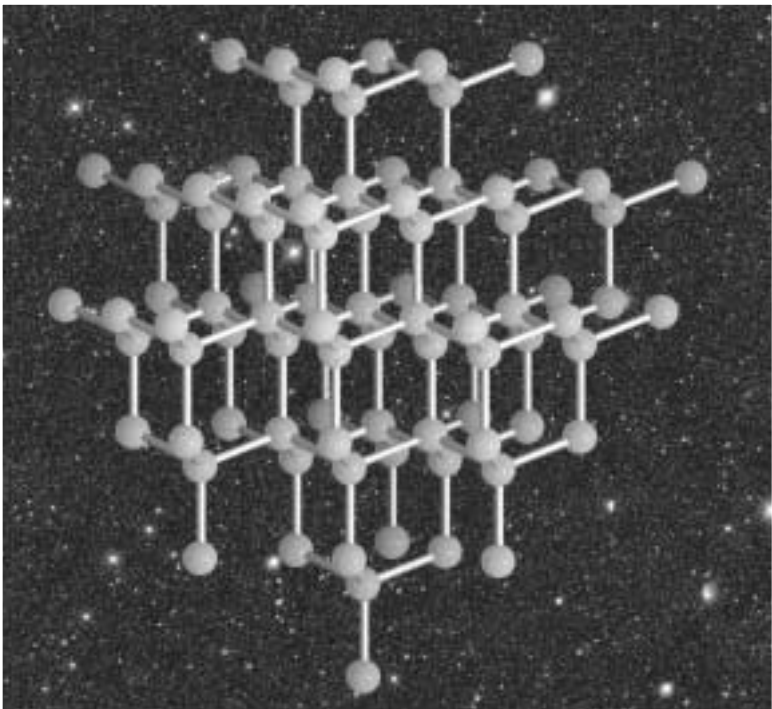
## STARDUST

*Continued from page 1*

interplanetary dust particles contain little or no nanodiamond stardust at all.

"This raises all sorts of questions about the origins of our solar system," Bradley said. "Our findings are consistent with recent research that has detected nanodiamonds within the accretion discs of other young stars that are similar to our early solar system."

The group concludes that an alternative explanation for the lack of nanodiamonds in the early meteorites is that all meteoritic nanodiamonds are presolar, but that their abundance decreases the further they are from the sun. In that case, our understanding of large-scale transport and circulation within the early solar system is incomplete.



This image of a ball-and-stick model of the diamond crystal structure (the balls are carbon atoms) is superimposed on a Hubble Space Telescope photo. Scientists from the Lab's Institute for Geophysics and Planetary Physics Program have found that some of these diamonds may have formed within the inner solar system as opposed to the wide-held belief that the structures formed from presolar stardust grain.



## 11th District candidate visits Lab

Elaine Shaw, a Danville business lawyer running for the 11th District congressional seat, came to the Lab Monday to learn about LLNL's work in homeland security and counterterrorism. Glenn Fox of the Forensic Science Center shows off an explosives "sniffer," a collaboration between the Lab and Sandia.



Newsline  
UC-LLNL  
PO Box 808, L-797  
Livermore, CA 94551-0808